BERSON, I. S. PA 8T91

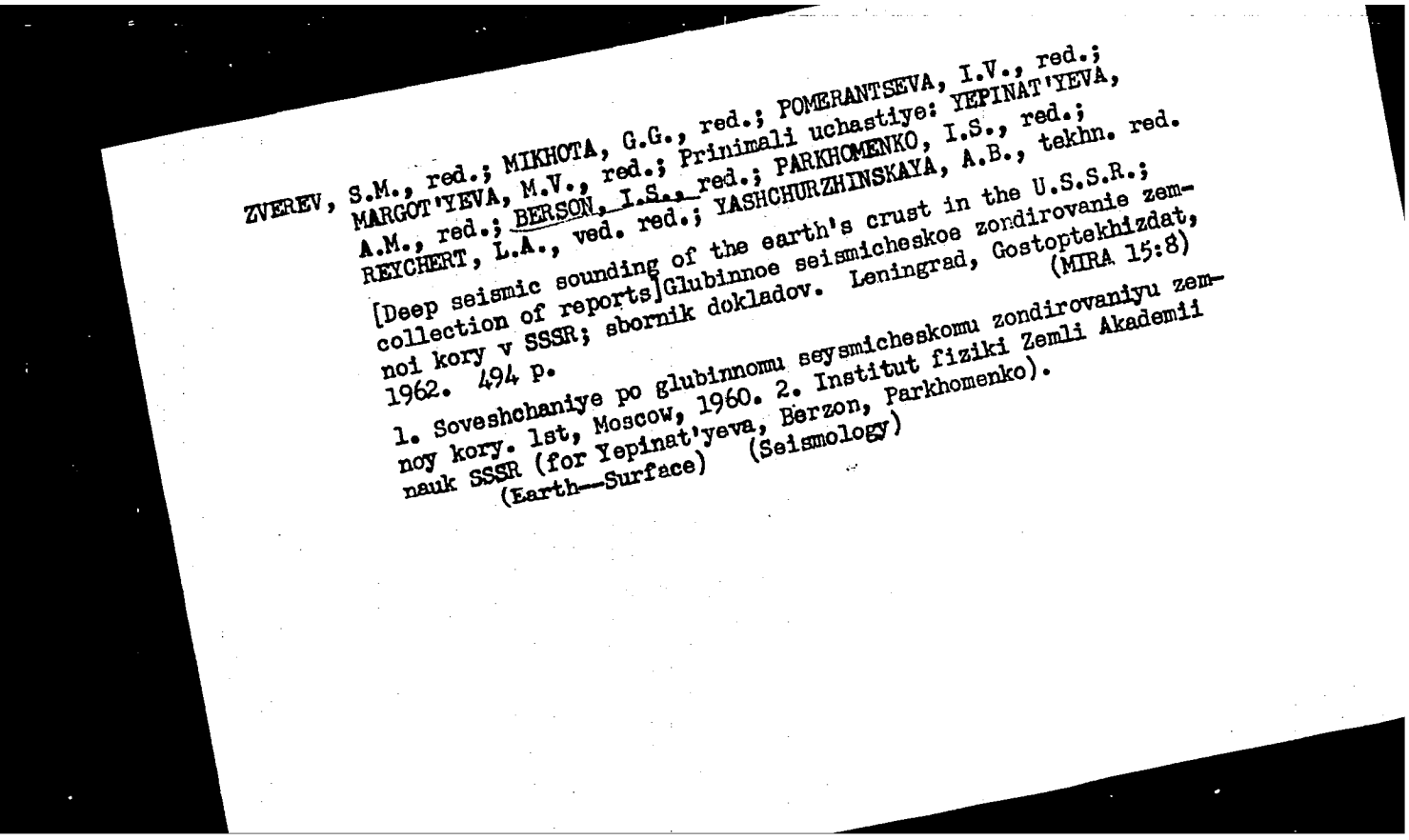
USSR/Seismometry Mar 1947

"On the Choice of the Longest Possible Time Curves of Reflected Waves," I. S. Berson, 12 pp

"Izv Ak Nauk Geograf Geofiz" Vol XI, No 3

The problem of choosing the longest possible time curves of reflected waves in order to decrease the possibility of an increase in interference phenomena with the increasing distance between the seismograph and the shot-point, when carrying out seismic work in regions with a great quantity of reflecting boundaries.

8T91



ZVEREV, S.M., red.; MIKHOTA, G.G., red.; POMERANTSEVA, I.V., red.; MARGOT'YEVA, M.V., red.; Prinimali uchastiye: YEPINAT'YEVA, A.M., red.; BERSON, I.S., red.; PARKHOMENKO, I.S., red.; REYCHERT, L.A., ved. red.; YASHCHURZHINSKAYA, A.B., tekhn. red.

[Deep seismic sounding of the earth's crust in the U.S.S.R.; collection of reports]Glubinnoe seismicheskoe zondirovanie zemnoi kory v SSSR; sbornik dokladov. Leningrad, Gostoptekhizdat, 1962. 494 p. (MIRA 15:8)

1. Soveshchaniye po glubinnomu seysmicheskomu zondirovaniyu zemnoy kory. 1st, Moscow, 1960. 2. Institut fiziki Zemli Akademii nauk SSSR (for Yepinat'yeva, Berzon, Parkhomenko).
(Earth—Surface) (Seismology)

BERSON, L.

Mercury-vapor lamps. Przegl elektrotechn 38 no.3:133-136 Mr '62.

BERSON, Lucjan, doc.

Directions for designing fluorescent lamp fittings for low and high ambient temperatures. Inst elektrotech prace 10 no.28: 47-63 '62.

1. Zaklad Techniki Swietlnej, Instytut Elektrotechniki, Warszawa.

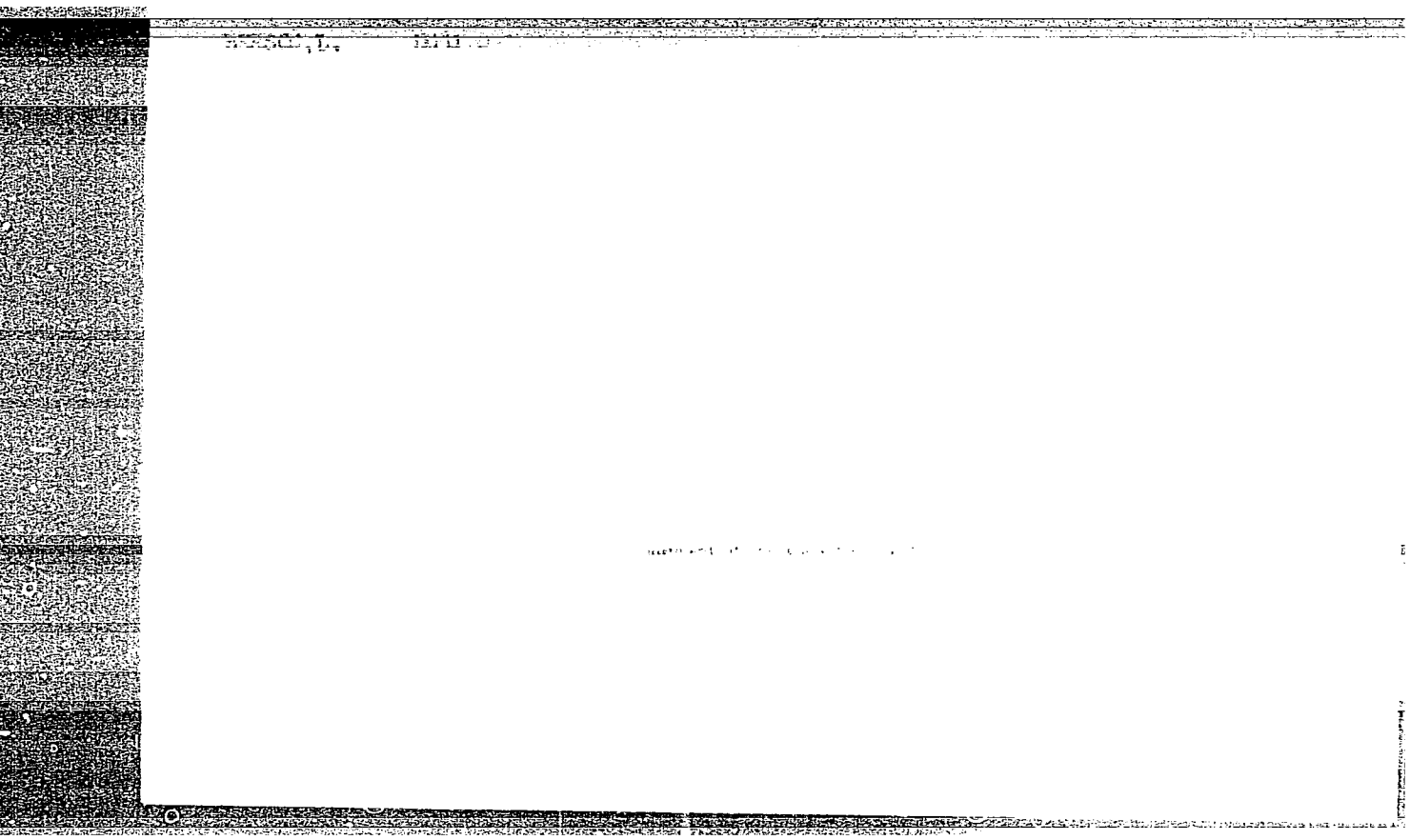
389.6 : 621.326

1125

Bergon J., Selection of the „Working Point" in the Standardisation of Lamps.

„Wybór punktu roboczego przy normalizacji żarówek". Przegląd Elektrotechniczny. No. 4—5—6, 1951, pp. 173—174, 4 figs.

It is possible, when producing lamps of certain „quality" to vary, within a wide range, by a corresponding design of the coil, the temperature of the filament and, consequently, the efficiency of the lamp. At the same time, the life of the lamp is automatically changed. The author, taking into consideration the two most essential components of cost per lumen-hour, i. e. the cost of depreciation of a lamp and the cost of energy consumed by it, arrives at a simple mathematical formula expressing the most advantageous life at which the cost per lumen-hour is lowest. It consists of a linear function of the ratio of the cost of a lamp to the cost of one kilowatt-hour. The article gives, in the from of a formula and curve, the percentage increase in the cost per lumen-hour at a corresponding rate of digression from the optimum value of life. Brief reference is made to arguments in favour of the selection of a lamp having less than the optimum working life.



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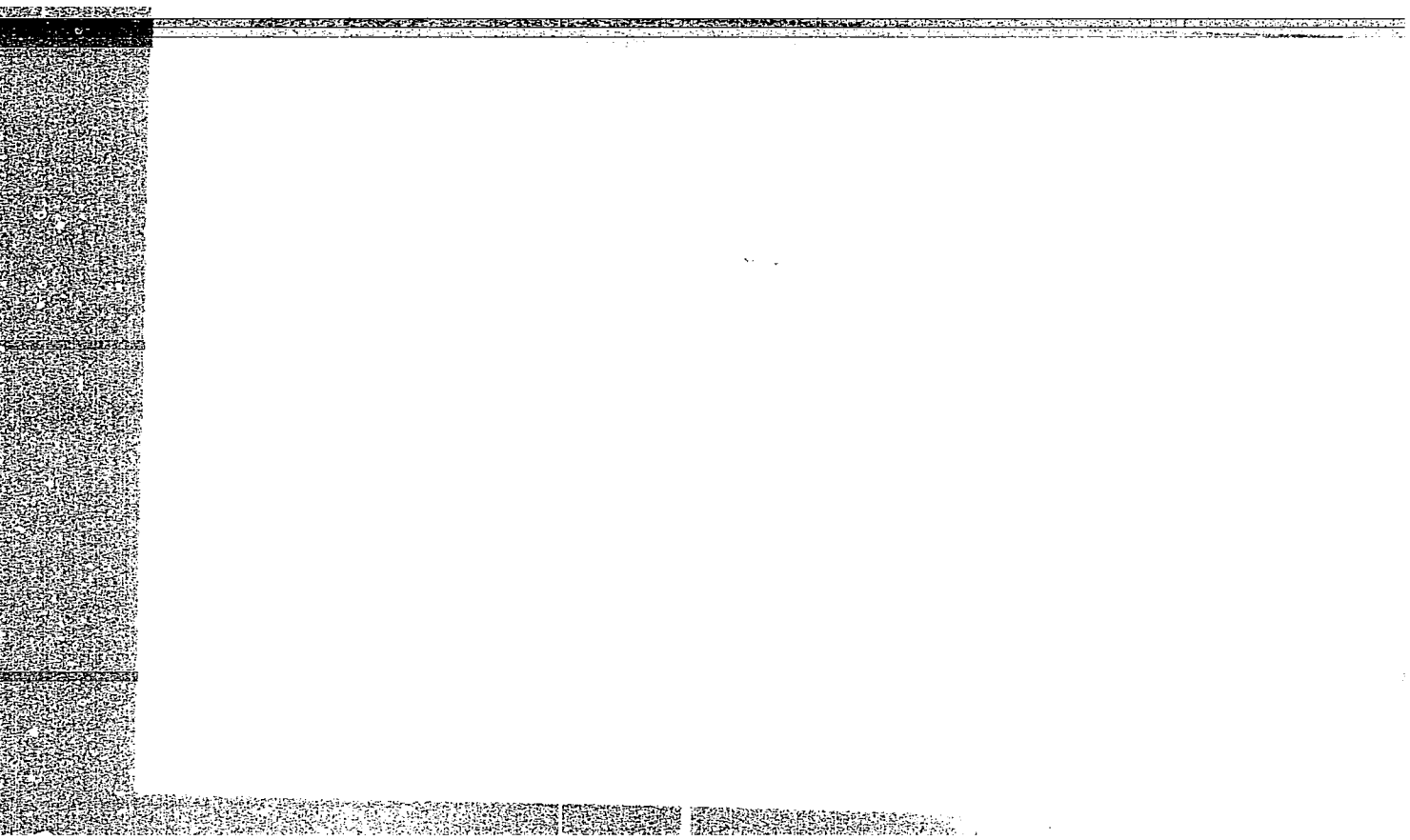


APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205020018-3"

BERSON, L.

Fluorescent electron tubes. p. 257. (PRZEGLAD ELEKTROTECHNICZNY, Vol. 30, No. 6, June 1954, Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 3, No. 12, Dec. 1954, Uncl.

BERSON, L.

POL.

2792. Phenomena in fluorescent tubes. 621.327.42
Przegląd elektrotech., 30, No. 12, 509–13 (1954) In Polish. L. BERSON.

The passage of current through hot-cathode tubes filled with Hg vapour at very low pressures results in ultraviolet radiation, the wavelength of which is shifted into the visible range by tube coating. Phenomena within the cathode space, passage of current through the positive column, the role of ionization and the molecular motion in the positive column are discussed. A power balance sheet of a 40 W 220 V fluorescent tube is presented.

J. ŁUKASZEWICZ

BERSON, L.

Problems of the starting of fluorescent lighting in low and high ambient temperatures. p. 8

PRACE vol. 4, no. 10, 1954

Warszawa, Poland

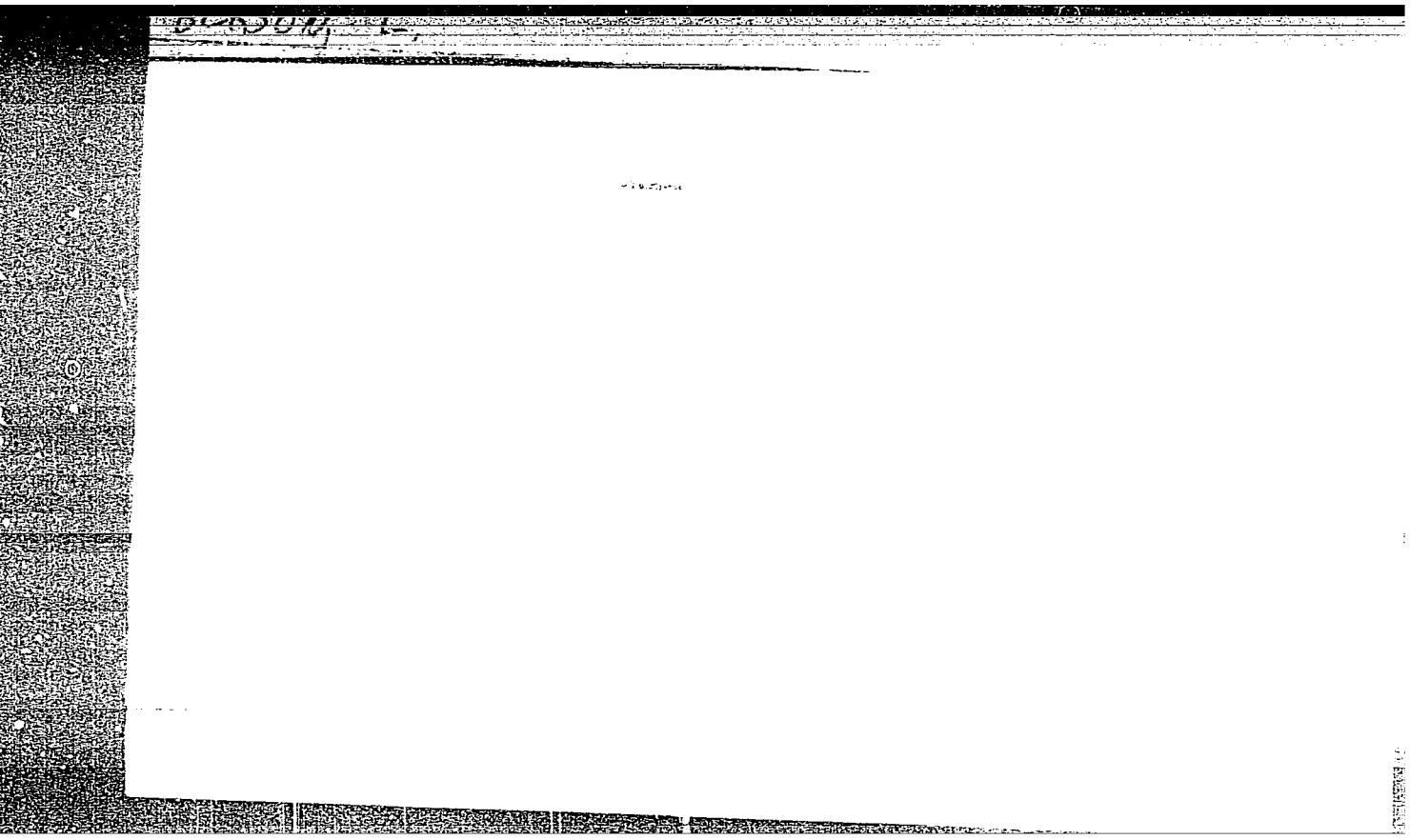
SO. EAST EUROPEAN ACCESSIONS LIST vol. 5, no. 10 Oct. 1956

BERSON, L.

BERSON, L. New methods of objective colorimetry. p. 779.

Vol. 31, No. 12, Dec. 1955
PRZEGLAD ELEKTROTECHNICZNY
TECHNOLOGY
Poland

So: East European Accession, Vol. 5, No. 5, May 1956



BERSON, L.

Choice of optimal performance conditions of a fluorescent lamp circuit in street lighting. p. 185.

PRZEGLAD ELEKTROTECHNICZNY. (Stowarzyszenie Elektrykow Polskich) Warszawa, Poland, Vol. 35, no. 5, May 1959.

Monthly list of East European Accessions (EEAI) LC, Vol. 9, no. 1, Jan. 1960.

Uncl.

PROKHOROV, I.N., inzh.; BERSON, L.M., inzh.; KONTSOV, A.I., inzh.

Modernization of a welding ballast rheostat. Svar. proizv. no.11: 37-38 N '60. (MIRA 13:10)
(Electric welding--Equipment and supplies)

BERSON, L.M., inzh.

Device for the mechanized feeding of parts in spot welding. Svar. proizv. no.3:28-30 Mr '62. (MIRA 15:2)
(Machinery--Welding) (Feed mechanisms)

S/135/62/000/006/013/014
A006/A106

AUTHORS: Vaks, I. A., Berson, L. M., Kontsov, A. I., Engineers

TITLE: Exchangeable cantilevers for МТПТ (MTPT)-type spot welding machines

PERIODICAL: Svarochnoye proizvodstvo, no. 6, 1962, 37 - 38

TEXT: To eliminate deficiencies occurring in the use of conventional tongs for welding light alloys, such as labor-consuming operation, overheating of contacts, poor quality of welds, the authors have developed a new design of tongs for welding light and copper alloys, 0.8 - 1.5 mm thick. The tongs consist of two B95 AT (V95AT) arms. The electrodes are fixed in holders and are water-cooled. The maximum operational path of the upper electrode is 200 mm. In one minute 20 spot-welds can be produced. The tongs can be easily mounted on MTPT and MTIP type welders. Conditions for spot welding D19AT are given below. There are 2 figures and 1 table.

Card 1/2

40930

1,2300' 2813

S/135/62/000/010/006/006
A006/A101

AUTHOR: Berson, L. M., Engineer

TITLE: A "soft" chamber for welding titanium and its alloys

PERIODICAL: Svarochnoye proizvodstvo, no. 10, 36 - 38

TEXT: Due to the high activity of titanium and its alloys, it is necessary to shield not only the molten metal of the welding pool but also the base metal zone, heated over 600°C. For this purpose a "soft" chamber was developed which is filled with argon to expel the air. The chamber is a balloon cloth bag with 5 sleeves. One sleeve is 1,500 mm long and 500 mm in diameter and serves as an economizer; the other four are used for welding purposes. A schematic diagram of the chamber is given. The design of the blast system makes it possible to eliminate all the residual air in the chamber within 2 hours by one blast. Parts with seams of up to 100 m total length can be simultaneously charged into the chamber; the economizer sleeve makes it possible to weld 2-m long parts. By the introduction of the soft chamber into practice, titanium alloys can be welded with the least preparation time of the chamber and with multiple use of argon, so that scarce gas can be saved. There are 4 figures.

Card 1/1

VAKS, I.A., inzh.; BERSON, L.M., inzh.; KONTSOV, A.I., inzh.

Electric furnace for making AN-T type fluxes. Svar. proizv. no.8: 28 Ag '62. (MIRA 15:11)
(Flux (Metallurgy)) (Electric furnaces)

VAKS, I.A., inzh.; BERSON, L.M., inzh.; KONTSOV, A.I., inzh.

Modernized oscillator with regulated power output. Svar.proizv. no.11:38-39 N '62. (MIRA 15:12)
(Oscillators, Electric)

BERSONS, I.; VEVERIS, O.; GUNNE, Kh. [Gunne, H.]; KOLMYKOVA, L.; PELEKIS, L.

Detection of leaks in hermetized objects of small dimensions by means of radioactive gas. Izv.AN Latv.SSR no.11:73-80 '63. (MIRA 17:4)

1. Institut fiziki AN LatvSSR.

BERSON, M.S.

A brigade of communist labor struggles for the title of enterprise of communist labor. Tekst.prom. 21 no.12:72-73 D '61.
(MIRA 15:2)

1. Nachal'nik normatino-issledovatel'skoy laboratorii po trudu Orenburgskogo shelkovogo kombinata.
(Chkalov--Silk manufacture--Labor productivity)
(Socialist competition)

OSHAROV, P.; PAGIN, V.; TESLYA, Ye., inzh.; CHERNOVA, Ye.; KOPTEV, A.; LAZUTIN, P.; ANISHCHENKOV, T., instruktor; TOKAREV, S.; BERSON, S.; KRICHEVSKIY, A.

They have too far to go. Sov. profsoiuzy 18 no.5:40-41 Mr '62. (MIRA 15:3)

1. Reydovaya brigada zhurnala "Sovetskiye profsoyuzy". 2. Krasnoyarskiy krayevoy komitet profsoyuza rabochikh stroitel'stva i promyshlennosti stroymaterialov (for Koptev). 3. Posadchik prokatnogo tsekha zavoda "Sibelektrostal'" (for Lazutin). 4. Krasnoyarskiy krayevoy komitet profsoyuza rabotnikov mestnoy promyshlennosti i kommunal'nogo khozyaystva (for Anishchenkov). 5. Zaveduyushchiy lektorskoy gruppoy Krasnoyarskogo krayevogo soveta profsoyuzov (for Tokarev). 6. Zaveduyushchiy otdelom krayevoy gazety "Krasnoyarskiy rabochiy" (for Berson). 7. Spetsial'nyy korrespondent zhurnala "Sovetskiye profsoyuzy" (for Krichevskiy).

(Krasnoyarsk--City planning)

BERSON, S. Ya.

Subject : USSR/Power Eng AID P - 3508

Card 1/1 Pub. 26 - 2/30

Author : Berson, S. Ya., I. P. Ivanov, I. M. Makhnovetskiy, S. P. Korsak, and M. D. Mikhel'man, Engs.

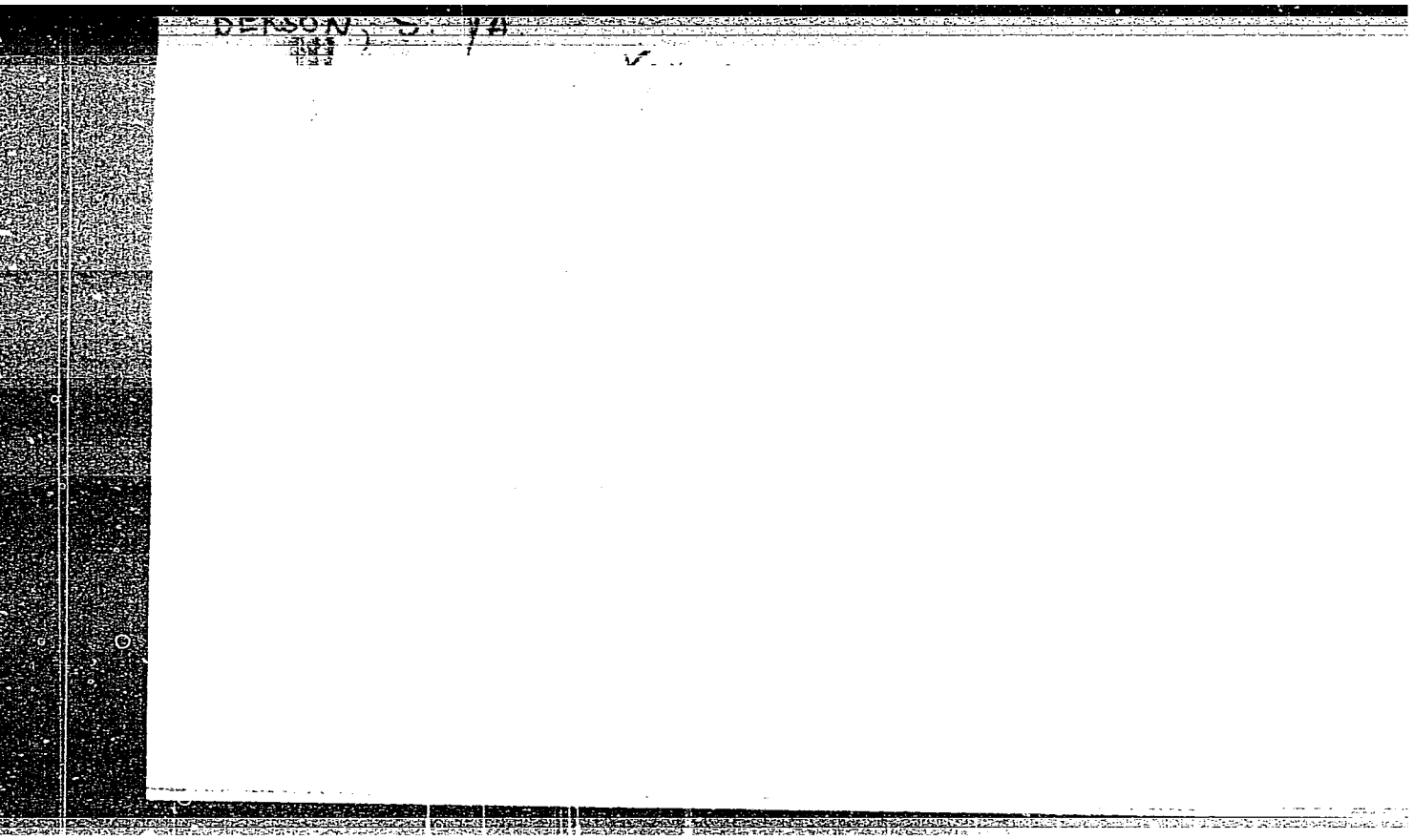
Title : Two stage hot air combustion of pulverized coal

Periodical : Elek. sta., 9, 5-8, S 1955

Abstract : The authors discuss in detail certain changes made on boilers of the PK-9-200/35 type, which use hard coal and are installed at one of the thermal power plants. The article describes the results of 4 years work in designing, testing and improving of the boiler design. Further research and tests are recommended. Three diagrams.

Institution : None

Submitted : No date



MITROFANOV, Yu.M., inzh.; HERSON, V.S., inzh.

Using rubber washers in the manufacture of built-up beams.
Avt.dor. 26 no.4:14-15 Ap '63. (MIRA 16:4)
(Bridges, Concrete) (Beams and girders)

FISHBEIN, V.Ya., BERSONNOVA, O.F., SOSNOVSKIY, P.I.

FISHBEIN, V.Ya, Candidate of Veterinary Science and BERSSONOVA, O.F., (Omsk Scientific Research Veterinary Institute) and SOSNOVSKIY, P.I. (Chief Veterinarian, Nazyvayev Rayon, Omsk Oblast). "An Experiment at Ridding Farms of Epizootic Equine Lymphangitis". SO: Veterinariya; Vol.23, No.7, July 1946; p.167; TABCON uncl deg

BERSONOV, S. A.

"Water Power Cadastre. Cadastre of the Potential Reserves of Water Power." Cand Tech Sci, Leningrad Polytechnic Inst imeni M. I. Kalinin, Karelo-Finnish Affiliate Acad Sci USSR, Petrozavodsk, 1955. (KL, No 14, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

8(6) SOV/112-59-3-4592

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 3, pp 44-45 (USSR)

AUTHOR: Bersonov, S. A.

TITLE: Hydrology and Power-Engineering Problems in the Karel'skaya ASSR (Voprosy gidrologii i energetiki Karel'skoy ASSR)

PERIODICAL: Izv. Karel'sk. i Kol'sk. fil. AN SSSR, 1957, Nr 1, pp 51-56

ABSTRACT: A survey is reported of water resources of the Karel'skaya ASSR as conducted by the Division of Hydrology, Power-Engineering, and Water Culture, Karel'skaya Branch, AS USSR. Inventory of the internal waters of Kareliya was the major objective of the work in 1946-1950. In 1951-1957, a limnological study was conducted with a view toward possible fishing industry on the larger lakes, as well as a hydrological study associated with water culture and a power-engineering study. Major complex problems of Kareliya are described.

Yu. M. S.

Card 1/1

BERSONOV, S.A.; GRIGOR'YEV, S.V., kand.tekhn.nauk, zasluzhennyy deyatel' nauki Karel'skoy ASSR. Prinimali uchastiye: NEYELOV, G.N., gidrolog; LITINSKIY, Yu.B., laborant; BONDARENKO, V.I.; PODRUGINA, R.A.; MINKINA, Ye.A.. KLOPOV, S.V., doktor tekhn.nauk, starshiy nauchnyy sotrudnik, retsenzent, otv.red.; TSVETKOV, N.V., red.izd-va; KRUGLIKOVA, N.A., tekhn.red.

[Water power resources of the Karelian A.S.S.R.; an account of potential resources of water power] Vodnoenergeticheskii kadastr Karel'skoi ASSR; kadastr potentsial'nykh zapasov vodnoi energii. Moskva, Izd-vo Akad.nauk SSSR, 1960. 406 p. (MIRA 13:9)

1. Zaveduyushchiy otdelom gidrologii i vodnogo khozyaystva Karel'skogo filiala Akademii nauk SSSR (for Grigor'yev). 2. Energeticheskiy institut im. G.M.Krzhizhanovskogo AN SSSR (for Klopov).
(Karelia--Hydroelectric power)

BERSONOVA, K.A.; MUKHITDINOV, U.

Testing herbicides on plants infesting drainage systems of the Golodnaya Steppe. Uzb. biol. zhur. 7 no.1:72-77 '63 (MIRA 17:7)

1. Institut genetiki i fiziologii rasteniy AN Uzbekskoy SSR.

BERSONOVA, K.A.; MUKHITDINOV, U.

Application of herbicides by the injection method for reed and cattail control in drains. Uzb. biol. zhur. 8 no.5:59-62 '64
(MIRA 18:2)

1. Institut genetiki i fiziologii rasteniy AN UzSSR.

BERSTEIN, I

3
0
9

1

1 - F/W

Berstein, I. Remarques sur un théorème de F. I. Dyson. Com. Acad. R. P. Romîne 5 (1955), 969–971. (Romanian. Russian and French summaries)

The following theorem is given. Suppose that T is an involution without fixed points on a locally connected, unicoherent continuum E. Let $\delta = \inf \varrho(x, Tx)$, and let f be a continuous real-valued function on E. If $0 < d \leq \delta$, there exist $a, b \in E$ with $\varrho(a, b) = d$ and $f(a) = f(b) = f(Ta) = f(Tb)$. This is a slight generalization of Livesay's theorem [Ann. of Math. (2) 59 (1954), 227–229; MR 15, 548], which in turn generalized the theorem of Dyson.

E. E. Floyd (Charlottesville, Va.).

BERSTEIN, I.; GANEA, T. (Bucuresti)

The category of a map and of a cohomology class. Fund mat 50 no.3:265-279 '62.

1. Institute of Mathematics, R.P.R. Academy, Bucharest,

BERSTEIN, Z.

Air pockets. p. 28. Aripile Patriei. Bucuresti. Vol. 1, No. 8, Aug. 1955.

SOURCE: East European Accessions List (EEAL), LC. Vol. 5, No. 3, March 1956.

BERSHTEL'

E-3

Poland / Analytical Chemistry.
Analysis of Organic Substances.

Abs Jour: Ref. Zhur - Khimiya No. 2, 1958, 4386

Author : Kalinovsky, Bershtel', Fetsko, Sveshkhovsky

Title : The Quantitative Micro-and Macro-Determination of Methyl Thiouracil (2-thio-4-oxy-6-methylpyrimidine) by Coulometric and Permanganate-Bromometric Methods

Orig Pub: Acta polon. pharmae., 1957, 14, No. 2, 77-83

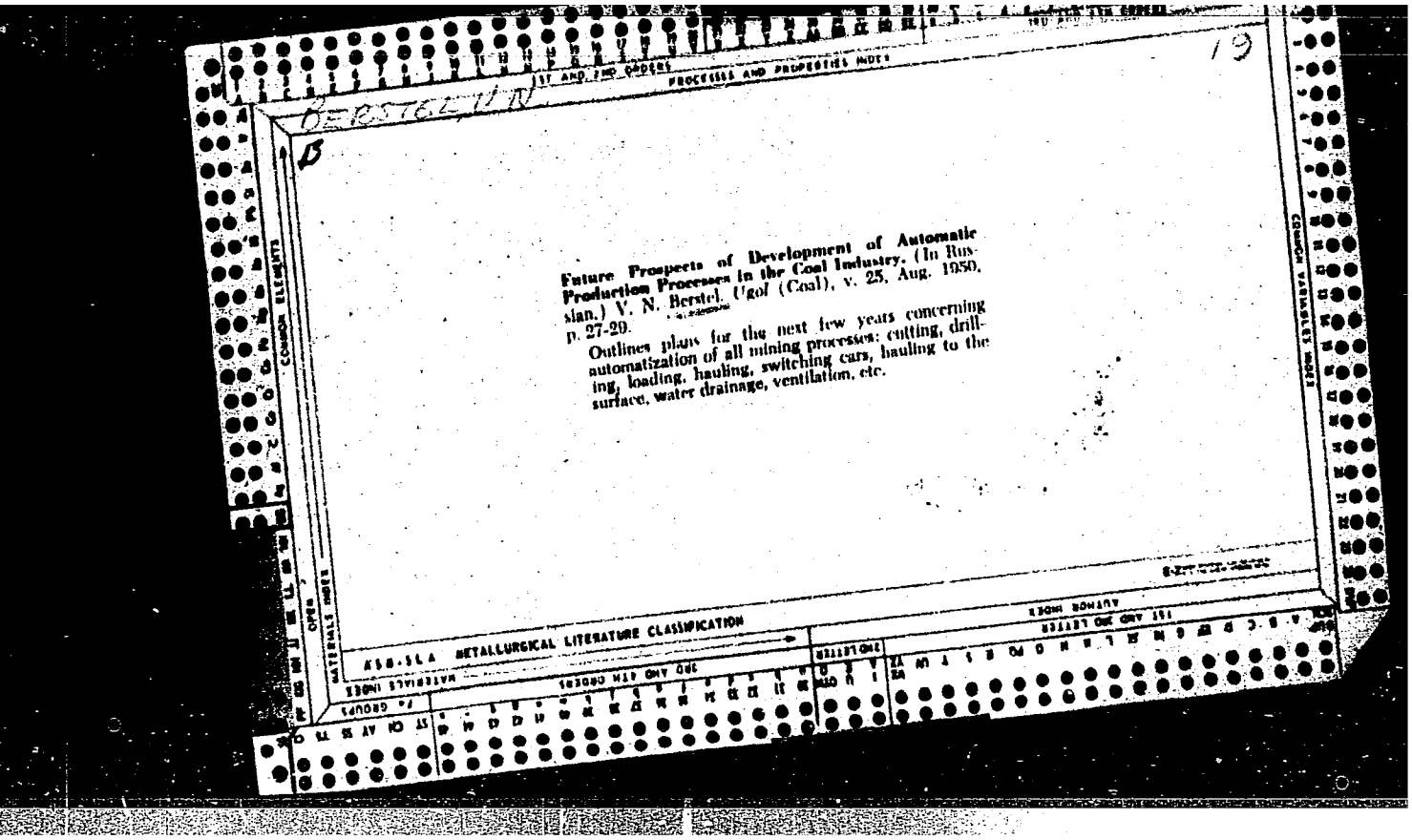
Abstract: The permanganate-bromometric determination of methyl thiouracil (1) is carried out in a bromoscope consisting of a conical falsk to which a fermentation tube (FT) and separatory funnel (SF) are tightly connected. First, into the flask, 50 ml. of 0.1N $KMnO_4$ (11) and 10 ml. of 10% KBr

Card 1/3

ANTONOVSKAYA, M.A., nauchnyy sotr.; BAZHENOV, I.I., nauchnyy sotr.; SAVEL'YEV, G.P., nauchnyy sotr.; SNAGOVSKIY, Ye.S., nauchnyy sotr. CHETVEROV, B.M., nauchnyy sotr.; BERSTEL', V.N., retsenzent; KUDRYAVTSEVA, I.G., tekhn. red.

[Widespread automatic control in coal mines] Kompleksnaia avtomatizatsiia na ugol'nykh shakhtakh. Moskva, Ugletekhizdat, 1950. 170 p. (MIRA 14:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut (for Antonovskaya, Bazhenov, Savel'yev, Snagovskiy, Chetverov).
(Automatic control)
(Coal mines and mining)



Future Prospects of Development of Automatic Production Processes in the Coal Industry. (In Russian.) V. N. Berstel. Ugol (Coal), v. 25, Aug. 1950, p. 27-29.

Outlines plans for the next few years concerning automatization of all mining processes: cutting, drilling, loading, hauling, switching cars, hauling to the surface, water drainage, ventilation, etc.

BERSTEL, V. N.

Fuel Abstracts
June 1954
Natural Solid Fuels:
Winning

4195. CO-ORDINATING CONFERENCE ON PROBLEM OF AUTOMATIZATION OF PROCESSES IN THE COAL INDUSTRY. Berstel, V.N. (Ugol (Coal), Jan. 1954, 45). A conference sponsored by the Ministry of the Coal Industry and the Institute of Automatics and Telemechanics, Academy of Sciences, U.S.S.R., is summarized. Processes mentioned include winning, winding, preparation and briquetting. (L).

9-28-54

BERSTEL', V.N., inzhener.

Some necessary remarks. ("Problems of new technology of underground electric mine equipment" M.I.Ozernoi. Reviewed by V.N. Berstel'). Ugol' 30 no.1:46-47 Ja '55. (MLRA 8:3)
(Coal-mining machinery)

BERSTEL', V.N.

AL'TSHULER, Z.Ye., inzh.; BASTUNSKIY, M.A., inzh.; BERSTEL', V.N., inzh.; BIRENBERG, I.E., inzh.; BOGOPOLSKIY, B.Kh., inzh.; BUKHARIN, S.I., inzh.; GERSHTEYN, B.G., inzh.; GRINSHPUN, L.V., inzh.; DREYYER, G.I., inzh.; DINERSHTEYN, A.G., inzh.; ZLATOPOL'SKIY, D.S., inzh.; KLANYUK, A.V., inzh.; KOZIN, Yu.V., inzh.; LEVITIN, I.P., inzh.; MEL'NIKOV, L.F., inzh.; MEL'KUMOV, L.G., inzh.; NADEL', M.B., inzh.; PAVLOV, N.A., inzh.; PASLEN, D.A., inzh.; PESIN, B.Ya., inzh.; PYATKOVSKIY, P.I., inzh.; RAZNOSCHIKOV, D.V., inzh.; ROZENOYER, G.Ya., inzh.; ROZENBERG, R.L., inzh.; ROYTENBARG, N.L., inzh.; RYABINSKIY, Ya.I., inzh.; SYPCHENKO, I.I., inzh.; TABACHNIKOV, L.D., inzh.; FEL'DMAN, E.S., inzh.; SHTRAKHMAN, G.Ya., inzh.; SHTERENGAS, N.S., inzh.; LEVITIN, I.P., otvetstvennyy red.; STEL'MAKH, A.N., red.izd-va; BEKKER, O.G., tekhn.red.

[Overall mechanization and automatization of production processes in the coal industry] Kompleksnaia mekhanizatsiia i avtomatizatsiia proizvodstvennykh protsessov v ugol'noi promyshlennosti. Pod red. IU.V.Kozina i dr. Moskva, Ugletekhizdat, 1957. 82 p. (MIRA 11:3)

1. Gosudarstvennyy proyektno-konstruktorskiy institut. 2. Institut Giprougleavtomatizatsiya i Tekhnicheskogo Upravleniya Ministerstva ugol'noy promyshlennosti (for all except: Levitin, Stel'makh, Bekker)

(Automatic control) (Coal mining machinery)

thermal vulcanization of chloroprene rubbers

SOURCE: AN SSSR. Doklady, v. 158, no. 4, 1964, 939-941, and insert [illegible] p. 94[illegible]

TOPIC TAGS: chloroprene rubber, rubber, [illegible] vulcanization, crystalline structure

Card 1/2

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... sample and resulted in more perfect structures. In this case ... every 400 atoms, on the average ... of the polymer. Orig. art. has: ... figures

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Card 2/2

BERSUDSKIY, L. D., LOGACHEV, A. A., and SOLODUKHO, O. Yu.

Kurs. Magnitorazvedki, (Course in Magnetic Prospecting) GONTI, 1940

1. BERSUDSKIY, L. D.

2. USSR (600)

"Relation Between the Magnetic Properties of Rocks and the Quantitative Contents of Ferromagnetic Materials in Them -- Materials of the All-Union Geological Research Institute." Geofizika, Collection 13, 1948 (95-97)

9. Meteorologiya i Gidrologiya, No. 3, 1949.
[redacted] Report U-2551. 30 Oct 52

L 05319-67 EWP(j)/EWP(k)/EWP(c)/EWP(h)/EWT(d)/EWT(m)/EWP(w)/EWP(f)/EWP(v)/ETI/ UR/6

ACC NR: AM6021067 Monograph EWP(t)/EWP(l) IJP(c) EM/RM/JH/WW/JD/HM

Bersudskiy, Vladimir YEfimovich (Candidate of Technical Sciences); Krysin, Vladimir Nikolayevich (Engineer); Lesnykh, Sergey Ivanovich (Engineer)

Production of honeycomb structures (Proizvodstvo sotovykh konstruktsiy) Moscow, Izd-vo "Mashinostroyeniye," 1966. 281 p. illus., biblio. Errata slip inserted. 3700 copies printed.

TOPIC TAGS: honeycomb structure, honeycomb filler, honeycomb structure manufacturing, honeycomb filler manufacturing, filler nonmetallic material, aluminum alloy, titanium alloy, stainless steel

PURPOSE AND COVERAGE: This book is intended for engineers-designers and technologists in various branches of the machine-building industry. It may also be useful to teachers and senior students of schools of higher education specializing in machine building. The book deals with problems connected with designing and manufacturing glued and brazed structures containing honeycomb fillers, the use of which in aviation, automobile, shipbuilding and construction industries is rapidly growing. Data on designs and strength of

UDC 629.135.2.002.2/002.5

Card 1/6

parts with honeycomb fillers made of nonmetallic materials, aluminum and titanium alloys or stainless steel are presented. Methods of making honeycomb fillers and structures having honeycomb fillers are described as well as equipment and instruments used for mechanization and automation of manufacturing and control of honeycomb fillers and parts containing them. Chapters I, II, and III were written by Engineer V. N. Krysin, and Chapters IV, V and VI by Candidate of technical sciences B. E. Bersudskiy and Engineer S. I. Lesnykh.

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1.3 Use of honeycomb structures -- 21

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ACC NR: AM6021067

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I. 05319-67
ACC NR: AM6021067

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L 05319-67
ACC NR: AM6021067

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SUB CODE: 13/ SUBM DATE 04Feb66/ ORIG REF: 025/ OTH REF: 041

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ACC NR: AP6032536 SOURCE CODE: UR/0413/66/000/017/0145/0145

INVENTOR: Andrianov, N. I.; Borsudskiy, Z. Ye.; Vlasov, A. A.; Kovachev, A. A.; Lipets, V. V.; Platonov, V. M.; Seletskiy, Ya. I.

ORG: none

TITLE: The inner panel of all-welded aircraft fuel tank-sections. Class 62, No. 185707

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 17, 1966, 145

TOPIC TAGS: aircraft fuel tank, ~~aircraft fuel system~~, ~~fuel tank~~ airframe component, ~~aerial~~ shell structure

ABSTRACT: The proposed inner panel of all-welded fuel tank-sections has a corrugated lining and cross piece stiffeners. In order to assure increased strength and reliability of the seams,

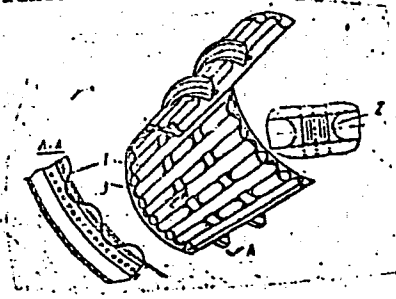

Fig. 1. Fuel tank sections

1 - Longitudinal stiffeners (corrugated lining); 2 - reinforcing plate; 3 - stamped conical bands.

UDC: 629.13.01/06

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ACC NR: AP6032536

it is provided with longitudinal stiffeners formed by the sinusoidal cross-section corrugated lining, having flat sections stamped out on the inner waves of the corrugation where they are joined with the cross piece stiffeners. These joints are reinforced by plates and along the ends by conical bands stamped to the lining (see Fig. 1). Orig. art. has: 1 figure.

SUB CODE: 1/ SUBM DATE: 27Nov64/

Card 2/2

BERSUKER, I. B.

USSR/Optics - Spectroscopy, K-6

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35796

Author: Bersuker, I. B.

Institution: None

Title: On the Theory of Optical Transitions of Weakly-Coupled Electrons

Original Periodical: Uch. zap. Kishinevsk. un-ta, 1955, 17, 119-126

Abstract: An examination of the additional effect of internal electrons of a multi-electron system on the optical transitions of the external electron is so much smaller than the coupling of the internal electrons, that the effect of the latter can be considered in the adiabatic approximation. The electromagnetic field, which causes the optical transitions, polarizes the shell of the system. The induced dipole moment exerts an additional influence on the optical electron. The polarization disturbance is in the general case characterized by the polarizability tensor and is subject to other selection rules, than the usual dipole transitions. This leads in

Card 1/2

USSR/Optics - Spectroscopy, K-6

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 35796

Abstract: many cases (for example, for molecules and crystals) to the removal of forbiddenness. Selection rules are given for systems pertaining to certain point groups of symmetry. The following examples are considered: transitions in alkali metals and in F-centers in crystals. In the former case the polarizability is determined by a scalar, and the selection rules do not change, but the transition probabilities sometimes change quite substantially. The correction for the lower transitions (not counting the resonant one) reaches 100% in the case of Cs. In the case of F-centers the polarization effect differs from zero only in the microscopic theory and causes many new transitions.

Card 2/2

BERSUKER, I. B., Cand Phys-Math Sci -- (diss) "Optical transitions in atoms and molecules with a polarizing body." Len, 1957. 11 pp (Len Order of Lenin State Univ im A. A. Zhdanov), 100 copies (KL, 52-57, 103)

BERSUKER, I. B.

51-5-21/26

AUTHOR: Bersuker, I.B

TITLE: A New Form of the Infrared Spectrum of Symmetric Molecules and Crystals. (Novyy vid infrakrasnogo spektra simmetrichnykh molekul i kristallov)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.2, No.5, pp. 671 - 672 (USSR).

ABSTRACT: In symmetric molecules and crystals, the frequencies observed in Raman spectrum are generally absent in infrared spectrum. There are, however, many cases when in the infrared absorption spectrum of low intensity the Raman frequencies are observed, e.g. in O_2, N_2, CO_2, H_2 and other gases [Refs.1-5].

The author uses adiabatic approximation for separation of the nuclear motion from the electron motion. He shows that in rotation-vibration transitions, the electro-magnetic field polarises the electron ψ-cloud. This inertialess polarisation causes additional perturbation and even in symmetric molecules and crystals produces Raman frequencies in the infra-red spectrum. This paper is part of an investigation of the effect of one part of a system on transitions in another.

The author thanks Professor M.E. Veselov for his advice.

There are 5 non-Slavic references.

Card 1/2

51-5-21/26

A New Form of the Infra-red Spectrum of Symmetric Molecules and Crystals.

ASSOCIATION: Physics Institute of the Leningrad University (Fizich. Institut Leningr. Universiteta)

SUBMITTED: December 10, 1956.

AVAILABLE: Library of Congress

Card 2/2

BERSUKER, I. B.

51-2-1/15

AUTHOR: Bersuker, I.B. (Leningrad).

TITLE: Effect of the core on optical-electron transitions. (K uchetu vliyaniya ostova na perekhody opticheskikh elektronov.)

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy) 1957, Vol.3, No.2, pp.97-103 (U.S.S.R.)

ABSTRACT: A many-electron system (an atom or a molecule) with a small number, k, of optical electrons is considered. The motion of the optical electrons is separated from that of the internal ones by the adiabatic approximation. It is assumed that $\omega_k \ll \omega_\alpha$ where ω_k is the frequency of the optical-electron transitions and ω_α that of the internal ones. An incident light wave, whose frequency is taken to be ω_k, polarizes the inner-electron core which follows the light-wave field without inertia. This inertialess polarization of the core interacts with the optical electrons, to produce an additional perturbation term W' in the expression for the optical-electron energies. The probability P_{AB} of an optical-electron transition from state A to state B is now given by Eq.(6)

$$P_{AB} = \frac{4\pi^2}{\hbar^3} \left| W_{AB}(\omega_{AB}) + W'_{AB}(\omega_{AB}) \right|^2 . \qquad (6)$$

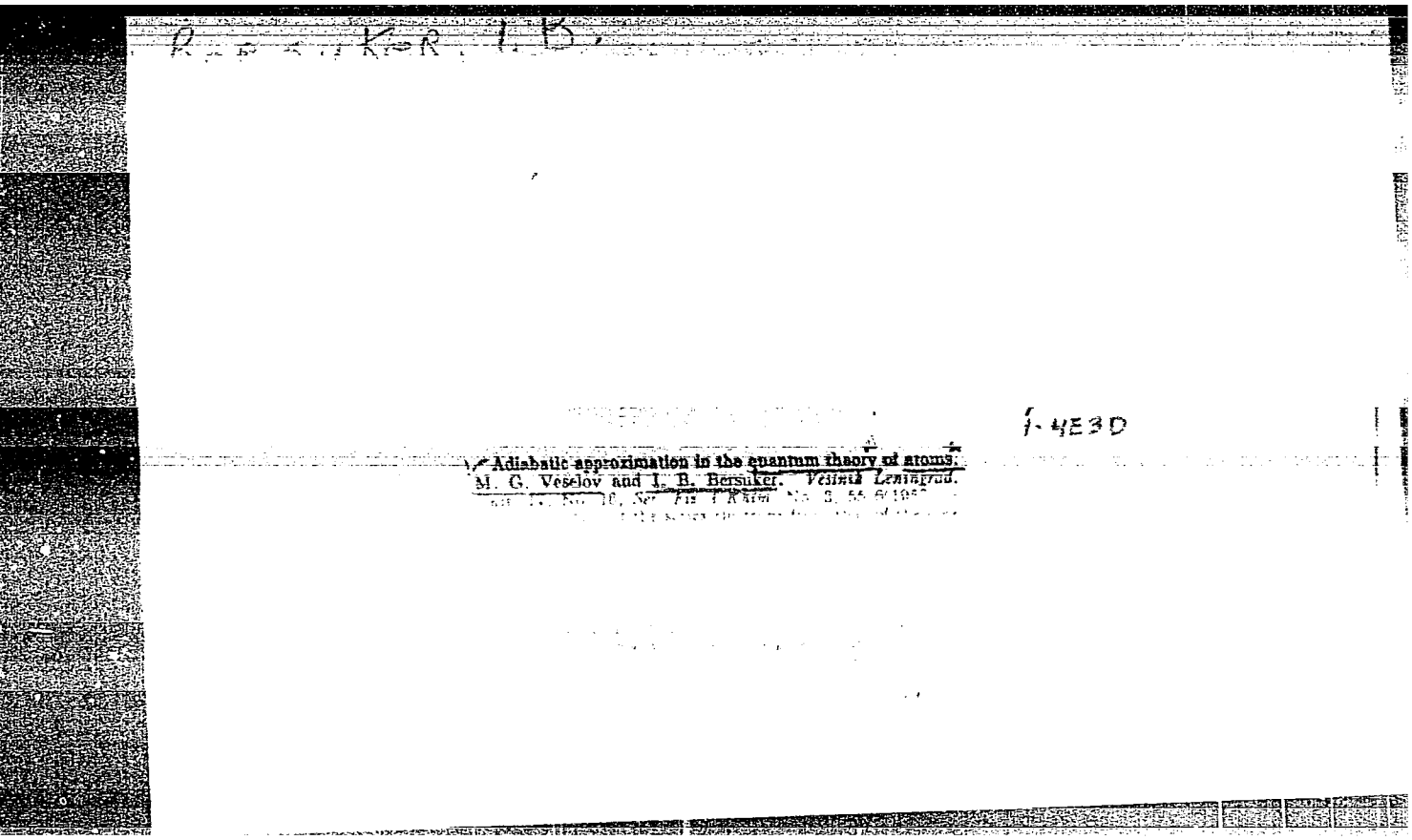
where W represents the direct effect of the incident light-wave and W' the core interaction. Assuming the core to be

Card 1/2

Effect of the core on optical-electron transitions. (Cont.)

spherically symmetric and isotropic, a correction due to W' in the expression for the optical-transition oscillator strength is found. For atoms with one optical electron the formula for the sum of oscillator strengths is re-calculated taking into account the perturbation W'. Table 1 gives the calculated values of this sum for the principal series of Li, Na, K, Ca^+ and Al^{++}. In the case of Na the uncorrected oscillator sum is calculated to be 1.031. With the W' correction this value becomes 1.276, compared with 1.26 obtained experimentally (G.S.Kvater, Ref.10). Thus the core interaction satisfactorily accounts for the departure of the experimental values of the oscillator sum from unity. New electron transitions in molecules due to the core interaction are found for symmetries $D_{\infty h}$, C_{3v}, D_3, C_{6h} and O (Table 2). In particular the $^3\Sigma_u^+ \rightarrow {}^3\Sigma_g^-$, $^3\Delta_u \rightarrow {}^3\Sigma_g^-$ transitions in oxygen, observed experimentally are predicted. The author expresses his thanks to Prof.M.G. Veselov for the latter's valuable advice. There are 2 tables and 17 references, 5 of which are Slavic. References cited:(10).

Card 2/2 SUBMITTED: December 10, 1956.
ASSOCIATION: Physics Institute, Leningrad State University.
AVAILABLE: Library of Congress



Adiabatic approximation in the quantum theory of atoms.
M. G. Veselov and I. B. Bersuker. *Vestnik Leningrad.*

BERSUKER, I.B.

20-5-19/67

AUTHOR: BERSUKER, I.B.

TITLE: On the Theorem of the Sum of the Forces of the Oscillators for Alkali Metals.
(K teoreme o summe sil ostsillyatorov dlya shchelochnykh metallov. Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 5, pp 1017 - 1019 (U.S.S.R.).

ABSTRACT: According to V.A. Fock (Zs.f. Phys., 89, 744 (1934), in a system with an optical electron putside of the shell (atom of a alkali metal) the sum of the forces of the oscillators at the transitions of the electron as observed in the experiment must be larger than 1. Furthermore, taking into consideration the operator of the exchange energy leads to a small correction g in the equation of the valence electron. Therefore the sum of the oscillator forces that can be measured in the experiment amounts to

$$\sum_{n,l}{}' f_{n\,l}^{n'l'} = 1 - \sum_{n_i l'} f_{n_i l}^{n_i l'} + g.$$

Here $f_{n_i\,l}^{n_i\,l'}$ stands for the forces of the oscillators for the purely theoretical transitions into the internal state of the kernel. The apostrophe at the left $\sum$ means that these transitions are excluded from the sum. The corresponding computations for sodium resulted in

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On the Theorem of the Sum of the Forces of the Oscillators for Alkali Metals.

$$\sum_{n'}{}' f_{30}^{n'2} = 1 - f_{30}^{21} + \varepsilon \; (f_{30}^{21} = - 0{,}037,$$

which coincided with the experimental data available at that time. But according to more recent and more accurate data we have for sodium

$$\sum_{n'} f_{30}^{n'1} = 1{,}26.$$

The author of the paper under review furthermore showed that in certain systems (to which also the alkali metals belong) it is necessary to apply a correction to the expression for the probability of transition, and therefore also for the oscillator force, for the transitions of an optical electron under the influence of the perturbation of an electromagnetic wave. In the equation of the valence electron of an alkali atom (which is situated in the field of a light wave also the screening potential $V(\vec{r})$ and the exchange operator $\hat{A}$ change as result of the deformation of the "ψ-cloud" of the internal electrons. The author of the paper under review is of the opinion that one must not neglect the influence of these changes on the transition of the optical electron.

SOV/48-22-6-5/28

AUTHORS: Veselov, M. G., Bersuker, I. B.

TITLE: The Adiabatic Approximation Method in the Quantum Theory of Atoms (Adiabaticheskoye priblizheniye v kvantovoy teorii atomov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 6, pp. 662-664 (USSR)

ABSTRACT: The following simplification is assumed: In order to sort out the electron states to be investigated from a combined system, it is assumed that the potential field in which the individual electrons move and which is determined by the coordinates of all electrons, is replaced by any effective field which is brought into line in a certain manner with all electron coordinates. It was found on the basis of physical considerations that such a simplification differs with respect to the electrons of the inner and outer shells respectively. The difference between the velocity of optical- and shell-electrons leads one to suppose that the electron cloud of the shell follows the comparatively slow external electrons adiabatically and without inertia. It is suggested that the quantum-theoretical multi-electron problem be divided into 2 stages as follows: 1.) According to the motion of electrons. 2.) According

Card 1/ 3

to the motion of the nuclei in accordance with the molecule theory. For the demonstration of the adiabatic approximation method the lithium atom was selected. The conclusion is drawn that the wave function of the shell and the field created by the shell electrons depends to a considerable extent on the position of the exterior electrons. The potential of this field is mentioned as amounting to 4,375 a.e. (which is not in agreement with the value computed by Hartree (Khartri) and Fock (Fok) which was 5,375.) The equations for the external electrons are integrated for the states 2s, 2p and 3p. A further application of adiabatic approximation is represented by the theoretical substantiation of a formula which takes into account the influence exercised by the polarization of the shell of the system on the probable transitions of the optical electrons (Ref I). In this case a correction function "G" is used in the formula, in which this influence is taken into account. There are 2 references, 2 of which are Soviet.

The Adiabatic Approximation Method in the Quantum Theory of Atoms

SOV/48-22-6-5/28

ASSOCIATION: Leningradskiy gos. universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

1. Atoms--Theory 2. Electrons--Motion 3. Perturbation theory 4. Mathematics

Card 3/3

SOV/48-22-6-26/28

AUTHOR: Bersuker, I. B.

TITLE: The Probability of Optical Transitions in Atoms and Molecules With Polarizing Lattice (Veroyatnosti opticheskikh perekhodov v atomakh i molekulakh s polyarizuyushchimsya ostovom)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 6, pp. 749-752 (USSR)

ABSTRACT: The results obtained by calculating the probability of optical transitions in atoms and molecules do not agree well with experimental data.
The method developed by Hartree-Fock (Khartri-Fok) for atoms supplies the most accurate results compatible with the total separation of variables. The further improvement of calculation methods therefore entails abandoning the total separation of variables. Nevertheless, the attempt will be made to take several effects of the not total separation of variables into account with the aid of the wave functions. The most important of these effects appears to be the influence exercised by the lattice on the transitions of optical electrons. Calculation of this effect is carried out in the following

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SOV/48-22-6-26/28

The Probability of Optical Transitions in Atoms and Molecules With Polarizing Lattice

chapters:
1) Improved formula for the probability of optical transitions in a many-electron system.
2) Oscillator strength for transition in atoms.
3) Correction concerning the theorem on the sum of oscillator strengths.
4) Electron transitions in molecules.
5) Infrared spectrum with oscillations of a combined spectrum.

There are 4 references, 2 of which are Soviet.

ASSOCIATION: Fizicheskiy institut Leningradskogo gos. universiteta im. A. A. Zhdanova
(Physics Institute, Leningrad State University imeni A. A. Zhdanov)

1. Atoms--Optical properties 2. Molecules--Optical properties
3. Perturbation theory

Card 2/2

S/051/60/009/006/001/018
E201/E191

AUTHOR: Bersuker, I.B.

TITLE: The Problem of Quantum Transitions in the Self-Consistent Field Approximation

PERIODICAL: Optika i spektroskopiya, 1960, Vol.9, No.6, pp 685-691

TEXT: The author describes a new, more accurate, method of solving non-stationary problems in the self-consistent field approximation. The probability of a quantum transition in a many-electron system is obtained by solving a system of non-stationary equations of the self-consistent field, similar to Fok's (Fock's) equations for the stationary case. It is shown that the usual formula for transition probabilities is a zeroth approximation in matrix elements of the operator representing interactions between electrons. Optical dipole transitions in atoms are considered and first-approximation corrections are derived for them. The paper is entirely theoretical.
Acknowledgements are made to M.G. Veselov, Yu.Ye. Perlin and A.V. Ablov for their advice.
There are 9 references: 4 Soviet, 3 English, 1 translation from English into Russian and 1 mixed (Soviet and German).
SUBMITTED: January 27, 1960
Card 1/1

S/020/60/132/03/27/066
B011/B008

AUTHOR: Bersuker, I. B.

TITLE: On the Problem of the Symmetry of Complex Compounds

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 3, pp. 587-590

TEXT: The author reports in his paper on the results of a calculation which could give a conception of an actual spatial arrangement of the ligands around the central ion and an approximate quantitative characteristic of the deviations of the position of the ligands from the position of the maximum symmetry. The author carried out an approximation of the ion-ion- and ion-dipole interaction between the central ion A and the ligands B. In this approximation, the full (adiabatic) interaction energy $E(R_i)$ in a complex of type AB_6 with a configuration $A\text{-}d^n$ and with an arbitrary position of the ligands B can be divided into 2 parts: $E(R_i) = W(R_i) + \xi(R_i)$. (1)

$W(R_i)$ is here the interaction energy of the spherically symmetric rest

On the Problem of the Symmetry of Complex Compounds

S/020/60/132/03/27/066
B011/B008

of the central ion with ligands and the ligands among themselves, and $\mathcal{E}(R_i)$ the mean energy of the interaction of the d-electrons with the ligands. The asymmetry in the position of the ligands is caused actually by the asymmetry of the ψ cloud of the d-electrons. The author presumes therefore that the complex can only be strictly octahedral under the influence of a spherically symmetric closed rest of the central ion, i.e. with the ligands positions in the points R_{0i} $(R'_0, \vartheta_{0i}, \varphi'_{0i})$. The author sees his task in finding the equilibrium positions of the ligands R_{0i} from the minimum conditions of the full potential energy $E(R_i)$. After various calculations ((2)-(5)) he arrives at the matrix elements (6) and (7). In the case of the configuration d^1 (the central ion of the type Ti^{3+}), the secular determinant from the matrix elements (6) leads to an equation of the 5th degree for $\mathcal{E}$. The solution of this equation in a general form is hardly possible. The author takes advantage of the fact that a secular equation in the field of the tetragonal symmetry can be solved accurately. The author notes from further calculations that the equilibrium positions of the ligands correspond to the tetragonal symmetry,

Card 2/4

On the Problem of the Symmetry of Complex Compounds

S/020/60/132/03/27/066
B011/B008

at which the ligands lie at the corners of an octahedron, shortened in the direction of a diagonal. The electron-term is here A_{2g}. The author derives the formula for the small parameter ζ (9) and (10), i.e. for the cases that the ligands are ions and represent dipoles with a dipole moment μ. For the configuration d^2 (ion of type V^{3+}) the wave functions (5) must be antisymmetrized correspondingly. The matrix elements of the secular equation are thereby expressed linearly by the matrix elements (6). The complexes AB_6 proved to be tetragonal in this case and ζ is expressed here by (13) for the elongated octahedron. The complexes of type AB_4 possess, however, the highest possible symmetry, i.e. they are regular tetrahedrons. The picture is reversed for the configuration d^8 (2 d-holes, the ion of type Ni^{++}). The author thanks A. V. Ablov, M. G. Veselov, Yu. Ye. Perlin and T. I. Malinovskiy for valuable discussions. There are 11 non-Soviet references.

ASSOCIATION: Bel'tskiy gosudarstvennyy pedagogicheskiy institut (Bel'tsy State Pedagogical Institute)

Card 3/4

On the Problem of the Symmetry of Complex Compounds

S/020/60/132/03/27/066
B011/B008

PRESENTED: January 11, 1960, by A. A. Grinberg, Academician

SUBMITTED: January 8, 1960

Card 4/4

BERSUKER, I.B.

Internal asymmetry of complex compounds. Part 1: Method of calculating and basic formulas in the approximation of the theory of crystalline field. Zhur.strukt.khim. 2 no.3:350-360 My-Je '61. (MIRA 15:1)

1. Institut khimii Moldavskogo filiala AN SSSR.
(Complex compounds)

BERSUKER, I.B.

Retarded motions in transition metal complexes. Opt. i spektr. 11 no.3:319-324 S '61. (MIRA 14:9)
(Transition metals)

30026
S/020/61/141/001/008/021
B103/B147

52600 2209, 3119

AUTHOR: Bersuker, I. B.

TITLE: Two conformations of some inorganic complexes of transition metals

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 1, 1961, 87 - 89

TEXT: The author mentions the possible existence of two conformations (nonequivalent equilibrium configurations) of transition metals occurring in octahedral complexes. In principle, they are similar to the conformations of organic compounds. Even if all ligands are equal, their equilibrium positions in complexes of transition metals with coordination number 6 are displaced from the positions at the vertices of a regular octahedron. This internal asymmetry is due to the asymmetry of the ψ-cloud of the d-electrons of the central atom. In such cases, two nonequivalent types of equilibrium configurations are possible. The equilibrium octahedron is tetragonally distorted in both cases. In one case, however, the diagonal of the octahedron is longer than the two others (Fig. 1, I) whereas, in the other case, it is shorter (Fig. 1, II). Configurations I and II correspond to the positions of minima on the

Card 1/5

Two conformations of some...

surface of potential energy of the complex. The following differences exist: (A) With respect to their energy: In the hitherto assumed approximations (harmonic vibrations of the ligands) the energies of I and II were assumed to be equal. Due to the asymmetry expressed by the cubic term in the equation for the potential energy distribution, the energies of I and II become unequal because of the displacement of ligands from the equilibrium positions (anharmonicity of vibrations). Since the energy is corrected by anharmonicity by a few percent only, the energy of II is a few percent higher than that of I. In transition from a regular to a distorted octahedron, this difference is in the order of 1 kcal/mole. With such an energy difference, the concentration of complexes in I under equilibrium conditions will be about 10 times the concentration in II. This may be easily confirmed by means of the Boltzmann distribution function. (B) The amount of internal asymmetry, $\xi = 2(R_{01} - R_{02})$ (difference in length of the two diagonals). (C) The energy and symmetry of electron states. (D) The frequency of delayed transitions between three equivalent states with different directions of asymmetry (along the diagonals 1 - 4, 2 - 5, and 3 - 6). (B) - (D) may be determined on the

Card 2/5

Two conformations of some...

basis of previous papers by the author (DAN, 132, 587 (1960); Zhurn. strukturn. khim., 2, 350 (1961); Optika i spektroskopiya, 11, 320 (1961)). Determination of the barrier height (also based on the last-mentioned papers) permits a calculation of the frequency of transitions between I and II, as well as their duration. Basing on an example of I and II for $[Cu(H_2O)_6]^{2+}$, the difference of the bind energies of ligands 1 and 2 is found to be about -15 (I) and +15 kcal/mole (II); therefore, I and II may be termed independent chemical objects. As expected, the ligands are less strongly bound to the longer diagonals than to the shorter ones. It is concluded that in I the two ligands in trans-position 1 and 4 are bound much more loosely than the four other ligands 2, 3, 5, and 6. In II, however, the four latter ligands are more loosely bound than the two former. At the same time, the near and remote ligands are more strongly bound in II than the corresponding ligands in I (the conformation energy of I not being higher than that of II, since four remote and weakly bound ligands exist in II while there are only two in I). This is one of the most important differences between I and II, and must affect the reactivity of these complexes. By the example of the Cu(II) complex, the author

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Two conformations of some...

explains the tendency of forming trans-substituted complexes according to the S_N1 mechanism. For certain reactions it is also possible to establish conditions which permit a cis-substitution. Relaxation phenomena and light absorption data may serve as further proofs for the existence of I and II. The former effect an additional absorption of ultrasonics by solutions of a complex compound. The problems raised should be further studied and checked by experiments. Academician A. A. Grinberg and Professor A. V. Ablov are thanked for a useful discussion. There are 1 figure and 4 Soviet references.

ASSOCIATION: Institut khimii Moldavskogo filiala Akademii nauk SSSR (Institute of Chemistry of the Moldavia Branch of the Academy of Sciences USSR)

30026
S/020/61/141/001/008/021
B103/B147

Two conformations of some...

PRESENTED: June 9, 1961, by A. A. Grinberg, Academician

SUBMITTED: June 9, 1961

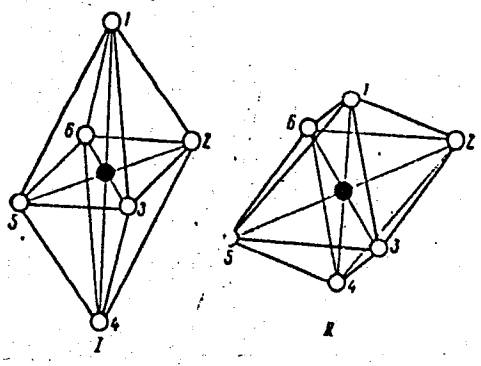

Fig. 1.

Card 5/5

BERSUKER, Isaak Borisovich; ABLOV, Anton Vasil'yevich; MAL'TSEVA, L.K., red.; POLONSKIY, S.A., tekhn. red.

[Chemical bonds in complex compounds]Khimicheskaia sviaz' v kompleksnykh soedineniiakh. Kishinev, Izd-vo "Shtiintsa" Akad. nauk Moldavskoi SSR, 1962. 207 p. (MIRA 15:11)
(Complex compounds) (Chemical bonds)

BERSUKER, I.B.

Internal asymmetry in complex compounds. Part 3: Effect on optical properties. Zhur.strukt.khim. 3 no.1:64-69 Ja-F '62. (MIRA 15:3)

1. Institut khimii AN Moldavskoy SSR.
(Complex compounds--Optical properties)

BERSUKER, I.B.

Possible existence of a rotational Raman spectrum and depolarization of Raleigh scattering in some hexafluorides and similar systems. Opt. i spektr. 7 no.4:528-529 Ap '62. (MIRA 15:5)
(Raman effect) (Flubrides) (Crystallography)

BERSUKER, I.B.; VEKHTER, B.G.

Splitting of infrared absorption and Raman spectrum bands in octahedral complexes of transition metals under the effect of inner asymmetry. Izv. AN Mold. SSR no.10:11-17 '62. (MIRA 17:12)

S/051/62/013/003/001/012
E032/E514

AUTHORS: Veselov, M.G. and Bersuker, I.B.

TITLE: Computation of the lithium atom on the adiabatic approximation and calculation of the nuclear magnetic moment

PERIODICAL: Optika i spektroskopiya, v.13, no.3, 1962, 297-301

TEXT: An account of the adiabatic approximation was given in a previous paper (Vestn.LGU, No.16, 55, 1957; Izv.AN SSSR, ser. fiz., 22, 662, 1958). It is based on the assumption that the inner electrons are in much more rapid motion than the optical electrons so that for each instantaneous position of the latter the former succeed in reaching a stationary state. Thus, the wave function for the atom may be written down in the form $\Psi = \Phi\psi$, where ψ describes the slow sub-system of n-p-electrons and Φ describes the inner electrons whose state depends parametrically on the position of the optical electrons. Exchange effects between the two sets of electrons are therefore not taken into account. However, the polarization of the core by the optical electron and the effect of this polarization on the electron is

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automatically included. In this type of calculation the wave function for an inner 1s-electron becomes deformed and depends on the position of the optical electron, while the equation for the latter includes a "mirror-force" potential. The latter equation has been integrated for the 2s, 2p and 3p states. A similar method of calculation has been reported by H. Reeh (Naturforsch., 15a, 377, 1960). The wave equation has been integrated numerically and full numerical data are reproduced in the form of tables. It turns out that although the present results are somewhat better than those which can be obtained by the Hartree method they are still appreciably different from the experimental values. It is suggested that the discrepancy might be removed by the inclusion of exchange effects. The improved behaviour of the wave functions now reported near the origin has enabled the authors to carry out more accurate calculations of the magnetic moment of the lithium nucleus. The numerical results are as follows:

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E032/E514

Energy of the optical electron Table 3

State	Hartree-Fock (without exchange)	Present values	Experiment
2s	0.176	0.184	0.198
2p	0.126	0.128	0.130
3p	0.0559	0.0565	0.0573

Table 4

Magnetic moment of Li^7

	μ(nuclear magnetons)
Hartree-Fock method	4.63
Present work	3.31
Experiment	3.26

There are 4 tables.

SUBMITTED: July 1, 1961

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S/056/62/043/004/028/061
B108/B186

AUTHOR: Bersuker, I. B.

TITLE: Inversion splitting of levels in free complexes of transition metals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 4(10), 1962, 1315 - 1322

TEXT: Octahedral complexes of transition metals (MX_6) with 1-fold degenerate electron terms are considered. The Hamiltonian of such a system is in general $H = H_q + H_Q + V(q,Q)$. The operator V is expanded as $V = V(q(0) + \sum_{\alpha=1}^{p} (\partial V/\partial Q_\alpha)_0 Q_\alpha + \ldots$. It is important to note the existence of more than one equilibrium configurations or minima of the adiabatic potential ($Q_\alpha = 0$), all of them equivalent. Their interaction with one another (high potential barrier) is assumed to be weak. In this case, the electron oscillation problem can be solved in adiabatic approximation with

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the wave function $\Phi_{i\varkappa} = \psi_i(q_1,\ldots,q_m;Q_1^i,\ldots,Q_p^i)\prod_{\alpha=1}^{p}\chi_{n_\alpha}(Q_\alpha^i)$, where m is the number of d-electrons of the transition metal, $\chi(Q)$ is the wave function of the harmonic oscillator, $\varkappa$ is short for the quantum numbers $n_1,\ldots,n_p$ characterizing the vibrational state of the system. The steady states of the free complex in the approximation assumed (N-fold degeneration) are described by $\Psi_{k\varkappa} = \sum_{i=1}^{N} c_i^k \Phi_{i\varkappa}$, $k = 1, 2, \ldots, N$. The operator $U = \sum_\alpha (\partial V/\partial Q_\alpha)_0 Q_\alpha - \sum_\alpha (\partial V/\partial Q_\alpha^i) Q_\alpha^i$ is a perturbation to the system, which describes the interaction between the equivalent configurations. The interaction is weak and adiabatic approximation can be used if $U_{12}^{\varkappa} \ll \hbar\omega$, where $\hbar\omega$ is a quantum of oscillation near one of the minima. The electron wave function in this region is $[H_q + V(q,0) + \sum_\alpha (\partial V/\partial Q_\alpha^i)_0 Q_\alpha^i]\psi_i = W_i(Q_\alpha^i)\psi_i$, $i = 1, 2, \ldots, N$. In first approximation, the inversion splitting is $\delta_\varkappa = -NU_{12}^{\varkappa}$. Splitting is

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Inversion splitting of levels...

calculated for the electron states E_g (three minima, tetragonal internal asymmetry) and T_{2g} (four minima, trigonal internal asymmetry). There are 2 figures and 4 tables.

ASSOCIATION: Akademiya nauk Moldavskoy SSR (Academy of Sciences of the Moldavian SSR)

SUBMITTED: March 26, 1962

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BERSUKER, I.B.; TITOVA, Yu.G.

Symmetry of ligand coordination around a central ion with unfilled p-shells. Izv. AN Mold. SSR no.10:18-22 '62.

(MIRA 17:12)

BERSUKER, I.B.

Effect of the cis-group on the reaction rate of trans-substitution. Zhur.strukt.khim. 4 no.3:461-462 My-Je '63. (MIRA 16:6)

1. Akademiya nauk Moldavskoy SSR, Institut khimii.
(Complex compounds) (Substitution (Chemistry))

BOKIY, G.B.; BERSUKER, I.B.

Reason for the low trans-activity of the nitro group in octahedral complexes of tetravalent platinum. Zhur.strukt.khim. 4 no.6: 934-936 N-D '63. (MIRA 17:4)

1. Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR i Institut khimii AN Moldavskoy SSR.

[redacted]

1963, 16-21

[redacted]

[redacted]

ACCESSION NR: AR5012224

BERSUKER, I.B.; VEKHTER, B.G.

Microwave and paramagnetic resonance spectra of octahedral complexes of transition metals of the d^1 configuration taking inversion splitting into account. Fiz. tver tela 5 no.9:2432-2440 S '63. (MIRA 16:10)

1. AN Moldavskoy SSR, Kishinev.

ACCESSION NR: AP3005629 S/0046/63/009/003/0378/0379

AUTHOR: Bersuker, I. B.

TITLE: On a possible method of ultrasonic vibration polarization

SOURCE: Akusticheskiy zhurnal, v. 9, no. 3, 1963, 378-379

TOPIC TAGS: ultrasonic absorption coefficient, complex ion, copper salt, aqueous complex ion, hydrated copper salt, trigonal symmetry, resonance frequency, polarization wave, acoustic wave

ABSTRACT: The ultrasonic absorption coefficient of aqueous complex ion Cu^{2+} in hydrated copper salt crystals with trigonal symmetry can be represented by

$$\alpha = 3 \cdot 10^{-11} \cdot \frac{\nu^3}{T} L, \qquad (1)$$

where ν - resonance frequency, T - absolute crystal temperature, L - direction factor of configuration and polarization wave. The magnitude L is shown to depend on the type of acoustic wave, its spatial orientation, and 4-axis polarization relative to the octahedron complex. Such a single crystal is shown to absorb fully one type of acoustical vibration wave along an experimental direction and become

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ACCESSION NR: AP3005629

transparent to others. Along direction I it transmits only a transverse wave, along II, a longitudinal wave, and along III, it transmits waves having polarization direction III' only. The author outlines the possibilities for utilizing such a single crystal as a polarizer and acoustic vibration analyzer. Orig. art. has: 1 figure, 1 formula, and 1 table.

ASSOCIATION: Akademiya nauk Moldavskoy SSR, Kishinev (Academy of Science, Moldavian SSR)

SUBMITTED: 10Nov62 DATE ACQ: 27Aug63 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 000

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S/056/63/044/004/019/044
B102/B186

AUTHOR: Bersuker, I. B.

TITLE: Spin-inversion levels in a magnetic field and the e.p.r. spectrum of octahedral Cu^{2+} ion complexes

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 4, 1963, 1239 - 1247

TEXT: The author continues a previous investigation of his (ZhETF, 43, 1315, 1962) where he had considered the inversion splitting of electron vibration levels of an octahedral complex. Inversion splitting was found to reach amounts which are of interest for radiospectroscopy. It may therefore be assumed that inversion splitting should be taken into account in problems on or related with electron paramagnetic resonance. These interrelations are investigated in the present paper with Cu^{2+} ion complexes taken as an example. Both spin inversion and spin-orbital interaction are taken into account. It can be shown that taking inversion splitting into account results in the appearance of spin-electron-vibrational levels in a magnetic field. Some of these levels correspond to the same spin states. The transition probabilities between those stated under the action of an

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electromagnetic perturbation term depend considerably on the relation between the magnetic field strength and inversion splitting. From this the characteristic temperature transition between two different e.p.r. spectra can be obtained, which is confirmed by available experimental data. The unusual frequency dependence of the spectrum and especially the possibility of absorption in a zero field are also investigated. There are 1 figure and 1 table.

ASSOCIATION: Akademiya nauk Moldavskoy SSR (Academy of Sciences of Moldavskaya SSR)

SUBMITTED: September 14, 1962

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RM/MAY/JD
ACCESSION NR: AP3000051 S/0056/63/044/005/1577/1582

65
63

AUTHOR: Bersuker, I. B.

TITLE: Strong resonant absorption of ultrasound in octahedral transition-metal complexes involving inversion splitting.

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SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1577-1582

TOPIC TAGS: ultrasonic resonant absorption, octahedral transition-metal complexes, inversion splitting, ultrasonic spectroscopy

ABSTRACT: It is shown that resonance absorption of ultra-sound several orders of magnitude stronger than paramagnetic absorption may occur in octahedral transition metal complexes possessing inversion splitting previously investigated by the author (Zhurnal eksperimental'noy i teoreticheskoy ffizziki, vol. 43, 1315 (1962). The absorption depends on direct transitions between inversion (electron-vibrational) levels and is not related to the change of the spin state of the complex. A formula is obtained for the transition probability. The absorption coefficient is calculated for complexes of aqueous Cu sup 2+ and Ti

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